

### **3.1 GENERAL**

#### **a. Purpose**

The purpose of this chapter is to establish procedures for ensuring the accuracy of scales and weighing systems used to officially weigh and inspect grain and to provide uniformity in the inspection and testing of weighing devices used for that purpose.

#### **b. Authority**

Section 7B (a) of the United States Grain Standards Act (Act), as amended, states: "The Secretary shall provide for the testing of all equipment used in the sampling, grading, inspection, and weighing for the purpose of official inspection, official weighing, or supervision of weighing of grain located at all grain elevators, warehouses, or other storage or handling facilities at which official inspection or weighing services are provided under this Act, to be made on a random and periodic basis, but at least annually and under such regulations as the Secretary may prescribe as he deems necessary to assure the accuracy and integrity of such equipment."

- (1) Section 7B (b) states: "The Secretary is authorized to cause such testing provided for in subsection (a) to be performed (1) by personnel employed by the Service, or (2) by States, political subdivisions thereof, or persons under the supervision of the Secretary, under such regulations as the Secretary may prescribe."
- (2) Section 7B (c) states: "Notwithstanding any other provision of law, no person shall use for the purposes of this Act any such equipment not approved by the Secretary."

#### **c. Fundamental Considerations**

- (1) General Observations on Accurate Weighing Enforcement
  - (a) In accordance with the Act, the Federal Grain Inspection Service (FGIS), of the Grain Inspection, Packers and Stockyards Administration has established a nationwide weighing program. This program includes the certification of grain weight and the

- (b) testing and certification of the scales and weighing systems used for official grain weighing and inspection. FGIS, delegated, and designated States must test all grain scales at facilities which request official weight certification.
- (c) All procedures outlined in this section of the Handbook shall be performed in accordance with the applicable Occupational Safety and Health Administration (OSHA), Department of Agriculture, and FGIS safety standards.

(2) Acceptance or Rejection of Official Weighing Equipment

Acceptance or rejection of official weighing equipment shall be based on the ability of this equipment to meet the specifications, tolerances, and performance requirements outlined in this chapter. These requirements are derived primarily from applicable sections of the General Code, the Scale Codes, the Automatic Bulk Weighing System Code, and the Weights Code of the 1994 edition of National Institute of Standards and Technology (NIST) Handbook 44, "Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices" (Handbook 44); and NIST Handbook 105-1, "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures" (Handbook 105-1), 1990 Revision.

(3) Request for Approval of New Installation or Modification to an Existing System

All new scale installations and/or modifications to systems must be approved prior to use for official weight certification. Prior to testing a new installation or modification, the local scale official shall send the following information to the FGIS Weighing and Equipment Branch and a copy to the field office manager in charge: (1) facility name, address, and contact; (2) scale type, model, kind, dimensions, capacity, divisions, and manufacturer; (3) number and capacity of load cells; (4) statement of scale usage; (5) number, weight, and type of test weights; (6) description and reason for modification, and proposed dates for modification and initial testing; and (7) prototype evaluation information. (H-44, 1994 UR.4. in part)

(4) Security Seals

All weighing devices shall be provided with sealing access points to adjustable components including junction boxes containing adjustable

components. (Nose-irons and other lever adjustments need not be sealed.) Access points shall be sealed with prenumbered seals. Unauthorized breakage of a seal will require recertification of the scale. Crimpers used to fasten lead wire seals and pre-numbered seals shall be kept in a secure place. Application or removal of a seal shall be recorded on the "Scale Test Report" forms (FGIS-965, FGIS-965-1, FGIS-965-2) and the "Scale Record Log" (FGIS-963) with appropriate explanations.

(5) Prohibited Practices

Coupled-in-motion weighing on railway track scales and weighing on belt conveyor scales is not permitted for official weight certification due to the relative inaccuracy of such devices and methods.

**d. Documentation**

(1) General

All scale tests performed by FGIS, delegated States, or designated States shall be properly documented on FGIS forms. FGIS shall supply scale testing forms, approved labels for inspected machineries, and scale record logs necessary for official scale testing purposes.

(2) Approved Label for Inspected Machinery (Form FGIS-931)

An approval label shall be applied on each scale upon completion of an official test, if the scale has been approved for official weight certification. The approval label shall be placed so that it is visible during normal scale operation. The official certifying the scale shall sign and date the approval label in the appropriate space and write the certified capacity on the label. The "Scale Record Log" must be updated to note that the scale was tested and a new label was applied. The approval label shall be removed from scales that are rejected or exceed the specified test schedule by more than 8 weeks.

(3) Rejected Tag (Form WH-11)

A Rejected Tag shall be placed on each weighing system when determination is made that the scale exceeds acceptable limits and cannot

be used for official weight certification. The Rejected Tag should be secured to the scale in such a position that it will be readily apparent that the scale has been rejected for official use. The official personnel rejecting the scale shall sign and date the Rejected Tag in the appropriate spaces. The Rejected Tag number should be recorded on the Scale Record Log and in the appropriate block on the "Scale Test Report." The Approved Label for Inspected Machinery shall be removed from scales that are rejected or taken out of service. A "Repair/Modification Notice," form FGIS-9601, should be issued when repair and/or modification is needed.

(4) Scale Record Log (Form FGIS-963)

The Scale Record Log is an official record which when maintained carefully and accurately will provide important historical data on all scales under the jurisdiction of FGIS. One per scale is required.

(a) Required Information

In addition to descriptive specifications on each scale, the Scale Record Log shall include, but not be limited to, the following information:

- 1) Scale test dates, times, results, and comments.
- 2) The next test due date, one of the following; 180, 90, 45, or 30 days, see "e" of this section to determine the next due date.
- 3) Scale and associated equipment malfunction information and dates.
- 4) Scale sealing points, seal numbers, and dates. Chapter 2, Section 2.3 details additional information weighers are required to show in the log.
- 5) Placement and Maintenance

The Scale Record Log shall be placed at or near each scale that is under the jurisdiction of FGIS and maintained by the shift supervisors, weighers, and scale officials. Completed logs shall be kept on file as official documentation.

(5) Scale Test Report

The Scale Test Report shall be used for recording data obtained during an official scale test.

(a) Statistical Data

The top third of the form should be filled out before starting the inspection or testing of the scale.

(b) Test Results

These are recorded during the test and are used to determine compliance with testing instructions and regulations. Results are recorded in the center of the form.

(c) Other Data

Appropriate comments on repairs, adjustments or recommendations, tolerances applied, and necessary signatures are recorded at the bottom of the form. The "as found" condition of the scale shall be noted on the form.

(d) Identification of Forms

The "Scale Test Reports" are identified in the lower left-hand corner and are to be used as follows:

- 1) FGIS-965 - Scale Test Report -- Grain Hopper (Attachment 1).
- 2) FGIS 965-1 - Scale Test Report -- Railroad Track (Attachment 2).
- 3) FGIS 965-2 - Scale Test Report -- Vehicle (or portable platform) (Attachment 3).

- 4) Instructions for Completing Scale Test Reports (Attachment 4).

(e) Distribution of "Scale Test Reports"

The "Scale Test Reports" are marked for distribution in the lower right-hand corner of each copy. They shall be distributed as follows:

- 1) Original (white) shall be retained in a separate file at the office (FGIS or State) to which the responsibility for the scale is assigned. The hard copy printed record of the test indications shall be attached to the original.
- 2) First Copy (blue) shall be given or sent to the owner/operator of the scale for their information and records.
- 3) Second Copy (green) shall be sent to the FGIS, Weighing and Equipment Branch by the FGIS scale specialist responsible for the scale.
- 4) Third Copy (pink) shall be sent to the FGIS field office which is responsible for the area in which the scale is located.
- 5) Fourth Copy (yellow) is an extra copy available for an interested party (e.g., State Weights and Measures supervisor or scale service company).

**e. Scale Testing Frequency**

(1) Semiannual Official Tests

Scale installations under the jurisdiction of FGIS shall be tested twice a year at approximately 6-month intervals. A scale that has been previously tested and found to be in compliance with the instructions regarding accuracy is expected to maintain its accuracy under normal operating conditions from one semiannual test to the next. Whenever possible, scales should be tested "as found" to at least the normal use range. When the scale has been adjusted before testing, the scale shall be considered not maintaining its accuracy and shall be put on an increased frequency testing schedule (see 4 below).

(2) Development of Historical Data

An accurate and thorough history of test results must be maintained so there can be no doubt in justifying why a scale is being rejected and removed from official weighing service due to its inability to maintain accuracy. This historical record should include, but not be limited to, "Scale Test Reports," "Repair/Modification Notices," and "Scale Record Logs," indicating dates, times, and nature of problem occurrences.

(3) First Official Test on Existing Weighing Devices

An existing weighing device receiving its first official test may be allowed for official use even though it does not comply with all FGIS requirements provided the accuracy specifications of this chapter are met. The owner or operator shall be notified in writing that noncompliance items shall be corrected prior to the next official test. Equipment placed in official service for the first time is to be tested again within 30 days.

(4) Increased Frequency Testing

It is important that every scale is tested uniformly, correctly, and without bias. A scale that is found incapable of maintaining its accuracy from one semiannual test to the next should be tested on an increased frequency. The following information is a guideline for increased frequency testing. Time intervals may vary according to circumstances. However, in no case shall a scale that is found to be continually incapable of maintaining its accuracy from one official test to the next be allowed to stay in official service.

- (a) When a semiannual test is performed and the test results are found to exceed the allowable tolerance, the scale shall be removed from official service until corrective action is taken to bring the scale within allowable tolerance and as close to zero error as practicable. Notify the scale owner or operator in writing that the scale must be tested again in 90 days. (Notification can be made on the Scale Test Report which is provided to the scale owner or operator.) Problems such as binds, which can cause scales to test out of tolerance, do not necessarily warrant increased frequency testing. If the results of the 90-day test are found acceptable, the owner or

operator shall be notified in writing that the scale is to be tested again in 6 months.

- (b) If a 90-day test is performed and the results exceed the allowable tolerance, the scale shall be removed from official service until corrective action is taken to bring the scale within allowable tolerance and as close to zero error as practicable. Notify the scale owner or operator in writing that the scale must be tested again in 45 days. If the results of the 45-day test are found acceptable, the owner or operator shall be notified in writing that the scale is to be tested again in 90 days.
- (c) If a 45-day test is performed on a scale and the results exceed the allowable tolerance, the scale shall be removed from official service. A scale that has failed a 45-day test shall not be retested until the owner or operator notifies the scale testing official that all repairs or modifications have been performed to correct the problem. If a new test of the scale is performed following these repairs or modifications and the results are within allowable tolerances, the scale shall be returned to official service. The owner or operator shall be notified in writing that the scale is to be tested again in 45 days.

**f. FGIS Type Evaluation Program**

FGIS shall, in conjunction with the National Type Evaluation Program (NTEP), conduct evaluations of automatic bulk weighing systems, railway track scales, and grain inspection scales to determine compliance with FGIS regulations and the applicable NTEP type evaluation examination criteria. Only those scales presently approved; and Class II, III, and III L scales that have been evaluated by FGIS or an NTEP authorized laboratory and approved under the NTEP may be used for official weighing and inspection purposes.

(1) Purpose

The purpose of this program is to establish the policy, delegation of authority, and responsibilities for implementation of the FGIS Scales Type Evaluation Program; prescribe procedures for requesting FGIS type evaluation, conducting a type evaluation examination, issuing a "Report of Test" (ROT) or "Certificate of Conformance" (CC), or issuing a letter of nonconformance (rejection for official use); and establish evaluation criteria with which to determine device conformance.



(2) Responsibilities

(a) FGIS, Weighing and Equipment Branch

- 1) Develop and maintain a list of automatic bulkweighing systems.
  - a) Establish type evaluation procedures to maintain NTEP accreditation.
  - b) Coordinate requests for FGIS and NTEP evaluations.
  - c) Establish a program to ensure that officially used weighing equipment complies with FGIS regulations and applicable NTEP requirements before and after installation.

(b) Scale Officials

- 1) Ensure that only FGIS approved equipment is installed for official use.
- 2) Ensure that approved equipment complies with the performance and procedural requirements of FGIS regulations.
- 3) Ensure that FGIS approved equipment is properly installed, operated, and maintained according to instructions supplied by the manufacturer and FGIS.
- 4) Ensure that any modifications to officially used scales and weighing systems, which may affect performance, reliability, or integrity, are approved by the Weighing and Equipment Branch before implementation.

(c) Procedures

1) Request for Obtaining FGIS Type Evaluation

All weighing equipment must be approved by FGIS before being allowed for official use. Requests for FGIS type evaluation shall be in writing and include authorization for reimbursement of testing and administrative processing costs. Written requests and all appropriate technical information (e.g., device description, operation) are to be forwarded to:

USDA, GIPSA, FMD, WEB  
Ag Stop 3631  
1400 Independence Ave.  
Washington, DC 20250-3631

A copy of the written request should also be sent to:

NTEP, NIST, OWM  
Physics Building 221, Rm A357  
Gaithersburg, MD 20899

(3) Conducting an FGIS Type Evaluation

(a) Under Laboratory Conditions

- 1) Environmental factors must be minimized during certain evaluation tests. Thus, the testing of electronic scale instrumentation is usually performed under controlled laboratory conditions.
- 2) A manufacturer, whose device is evaluated by FGIS and found to comply with the applicable requirements, is issued a satisfactory CC under the National Type Evaluation Program administrated by NIST. Copies will be sent to official scale testing personnel, Weighing and Equipment Branch, and NTEP.

- 3) NTEP will issue the CC upon receipt of a satisfactory FGIS evaluation report and distribute copies to State Weights and Measures offices.
  - a) When a device has undergone FGIS type evaluation and been found not to be in compliance with all FGIS regulations, a letter of nonconformance shall be issued indicating the reason the device does not comply with specific FGIS requirements.
  - b) If the manufacturer makes the necessary correction, the device may be resubmitted for evaluation. This evaluation process may be repeated several times until the device complies with all FGIS requirements. A request for FGIS type evaluation may be withdrawn by the manufacturer at any time during the process.

4) Under Field Conditions

An onsite evaluation of the weighing system(s) is to be performed by the scale specialist during official inspection of the scale to ensure compliance with the performance and procedural requirements of the FGIS regulations.

- a) The scale specialist shall ensure that equipment is approved and has been issued an NTEP CC. Using the CC and the manufacturer's technical literature, the scale specialist shall determine that the equipment is a replica of that which is described in the CC. Only those features and options evaluated and described therein are permitted.
- b) The scale specialist shall ensure that the equipment is properly installed, operated, and maintained according to instructions supplied by the manufacturer and FGIS/NTEP. Any modifications

to an officially approved device or system affecting accuracy, reliability, or integrity must be approved by the manufacturer and the FGIS Weighing and Equipment Branch before implementation.

(4) Other Factors

Radio frequency interference (RFI), adverse effects from other grain handling equipment, and environmental influences may adversely affect the performance of a scale. Tests to determine the effects of these factors shall be conducted with equipment and under conditions which are usual and customary with respect to the location and use of the scale. These tests shall be conducted for each new installation or whenever the scale official suspects that performance may be affected by any of the aforementioned factors. (See the Test Procedures Section 3.5 of this chapter for specific procedures).



# Scale Test Report -- Railroad Track

[illegible]

ATTACHMENT 3  
WEIGHING HANDBOOK  
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### Scale Test Report -- Vehicle

U.S. DEPARTMENT OF AGRICULTURE FEDERAL GRAIN INSPECTION SERVICE FIELD MANAGEMENT DIVISION				LAST DATE TESTED (5)		TEST DATE (6)		PAGE _____ OF _____	
<b>SCALE TEST REPORT - VEHICLE</b>				MANUFACTURER (7)		MODEL OF SCALE (8)		SCALE CODE NO. (9)	
TESTING AGENCY (Inspector's Name, Address) (1)				SCALE CAPACITY (10)		MINIMUM DIVISION (11)		SERIAL NO. (12)	
				PLATFORM SIZE (16) X _____ FT.		SECTIONAL CAPACITY (15)		SCALE NO. (14)	
FIELD OFFICE LOCATION (2)				SCALE TYPE <input type="checkbox"/> FULL ELEC. <input type="checkbox"/> ELEC. DIAL <input type="checkbox"/> LEVER TR <input type="checkbox"/> MECH. DIAL		(13)		LOAD CELL CAPACITY (18)	
SCALE OWNER (3)				TEST WEIGHT INFORMATION				TYPE AND MFG. (20)	
SCALE LOCATION (4)				TEST WEIGHT OWNER (21)		TOTAL WEIGHT (22)		LAST REVERIFICATION DATE (23)	
<b>TEST RESULTS</b>									
SENSITIVITY ZERO _____ CAP. (26)		DISCRIMINATION ZERO _____ (27)		SCALE CONDITION AS FOUND (28)			ZERO BALANCE AS FOUND (29)		
SHIFT TEST DIRECTION	BAL.	SECTION 1	SECTION 2	SECTION 3	SECTION 4	SECTION 5	SECTION 6	BAL.	
<b>SECTION TEST</b>									
<b>INCREASING LOAD TEST</b>					<b>STRAIN LOAD TEST</b>				
LOAD	TEST WEIGHT	WEIGHT INDICATION	ERROR WEIGHT	ERROR	FACTORS		TEST NO. 1	TEST NO. 2	
					EMPTY TRUCK WEIGHT				
					TEST WEIGHT ADDED				
					TRUCK AND WEIGHT INDICATION				
					ERROR ON WEIGHT ADDED				
					CONDITION OF PIT				
					CONDITION OF APPROACHES				
					CONDITION OF PLATFORM				
					KIND OF DRAINAGE				
					RECORD BALANCE CHANGE _____ lbs.				
THE ERRORS IN THIS SCALE AS INDICATED ABOVE <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT WITHIN THE ACCURACY REQUIREMENTS PRESCRIBED BY THE FEDERAL GRAIN INSPECTION SERVICE (30)									
REPAIRS, ADJUSTMENTS, MODIFICATIONS OR RECOMMENDATIONS MADE AT THIS TIME									
(31)									
NEXT TEST IN: <input type="checkbox"/> 30 Days (32) <input type="checkbox"/> 45 Days <input type="checkbox"/> 60 Days <input type="checkbox"/> 90 Days <input type="checkbox"/> 180 Days									
APPLICABLE TOLERANCE (33)		MAINTENANCE		BY		APPROVAL SEAL APPLIED (34)		DATE (35)	
RECEIPT OF REPORT ACKNOWLEDGED (Signature) (37)		FGIS WITNESS (Signature) (38)		REJECTION TAG NO. (36)					

FORM FGIS-965-2 (12-84) (Replaces Form WH-9-2 (2-79) which is obsolete.)

ORIGINAL - Scale Inspector's Copy

ATTACHMENT 4  
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Instruction for Completing Scale Test Reports

- 1 Testing Agency. The name and address of the organization performing the test. Include the name of the scale tester. If an elevator employee is performing the test, the person's name is sufficient.
- 2 Field Office Location. The city and state of the field office which has jurisdiction for the scale being tested.
- 3 Scale Owner. Facility name and designation; i.e., Mid South Grain, House A.
- 4 Scale Location. The street address of the elevator.
- 5 Last Date Tested. Date of the last test.
- 6 Test Date. The month, day, and year of the test.
- 7 Manufacturer. The name of the company, corporation, person, etc., who manufactured the indicating element.
- 8 Model of scale. The model name, number, or designation which has been assigned by the manufacturer.
- 9 Scale Code No. The code number of the scale which was assigned by the FGIS Weighing and Equipment Branch for use in the ADP Scale Test Monitoring System.
- 10 Scale Capacity. The maximum gross load that can be accepted for official weight certification as determined by an official scale inspector.
- 11 Minimum Division. The value of the smallest unit that can be indicated on the primary indicating element during normal weighing.
- 12 Serial No. The nonrepetitive number which was assigned by the manufacturer and affixed to the indicating element or beam.
- 13 Scale Type. Check the appropriate box to indicate whether the scale is full electronic, levertronic, a full capacity beam (FCB) mechanical scale, or a counterpoise (CPB) mechanical scale.
- 14 Scale No. The number assigned to the scale by the owner which usually includes S and/ or R designations to differentiate between shipping and receiving.
- 15 Sectional Capacity. The maximum gross load that can be applied to any one section of the scale without causing structural deflections affecting the accuracy of the scale.
- 16 Platform Size. The length and width of the vehicle scale platform.
- 17 Scale Length. The length of the live track on a railroad track scale.
- 18 Load Cell Capacity. The manufacturer's rated capacity of one of the load cells in the scale system.
- 19 Sectional Test Load. The maximum amount of test standards applied to any one section of a railroad track or vehicle scale.
- 20 Type and Mfg. For vehicle and hopper scales indicate the type of test weights; i.e., fab, basket, cast, etc., and the manufacturer. For railroad track scales check the appropriate box.
- 21 Test Weight Owner. Indicate the test weight owner.
- 22 Total Weight. The total amount of the test weights combined.
- 23 Last Reverification Date. Indicate the month and year of the latest test weight reverification.
- 24 I.D. No. The identification of the test car.
- 25 Number of Weights. The total number of individual weights.
- 26 Sensitivity. The results of the sensitivity check in number of divisions at zero and at capacity.
- 27 Discrimination. The results of the discrimination check in number of divisions at ZERO and at CAPACITY.
- 28 Scale Condition as Found. Indicate the condition of the scale as found. (i.e., water in pit, dirty platform, etc.)
- 29 Zero Balance as Found. The weight indication on the primary indicating element with no load on the load receiving element at the time of starting the official inspection and test.
- 30 Results. Check appropriate box; /x/ ARE-for scales that are within tolerance or have been adjusted to be within tolerance, /x/ ARE NOT-for a scale that cannot be used for official weight certification because it cannot be adjusted or fixed and is consequently REJECTED.
- 31 Remarks. Indicate any repairs, adjustments, modifications, or recommendations. (i.e., scale serviced before test, load cell #2 replaced, A/D converter replaced.)
- 32 Next Test In. Check the appropriate box to indicate approximately when the next test is due.
- 33 Applicable Tolerance. ("X" one.) Indicate which tolerance is to be applied.
- 34 Approval Seal Applied. Indicate the name of the inspector who applied the FGIS Approved Label for Inspected Machinery. If the person is the same as the FGIS witness, just initial.
- 35 Date. Indicate the date of approval.
- 36 Rejection Tag No. Indicate the number of the rejection tag, if applicable.
- 37 Receipt of Report Acknowledged. Signature of the scale owner's representative.
- 38 FGIS Witness. FGIS or delegated official who observed the testing and approval of the scale.